Virgin Island Territorial Emergency Management Agency

Tsunami Incident Annex

June 2017

Record of Changes

Date of Change(s)	Annex	Page(s)	Description of Changes(s)	Feedback provide by:	Change(s) made by:

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Purpose, Scope, Situation, Assumptions

Purpose

The purpose of this annex is to establish guidelines for the Virgin Islands to use in an effort to reduce the potential for loss of life from a tsunami incident. The plan will help the USVI become better prepared when a disaster occurs by providing guidance on how VITEMA will notify the public about tsunami warnings and the impact of a tsunami.

Scope

1. Outlines EOC Activation
2. Describes notification systems and procedures
3. Identifies inundation zones on each island and potential evacuation routes.

Situation Overview

Tsunami Hazard and Threat Analysis Summary

1. The most recent tsunamis affecting the United States Virgin Islands (USVI) and Puerto Rico have occurred in 1867, 1918 and 1946.
2. Sources are defined as *local* (less than 25 minutes' travel time), *regional* (25 minutes to 2 hours) or *distant* (more than 2 hours travel time).
3. Rough estimates of arrival times for tsunamis from potential source areas are as follows:
    a. Slope Slumping on Puerto Rico Northeast Slopes or in the Puerto Rico Trench – approximately 30 minutes for St. Thomas and St. John; about 40 minutes for St. Croix;
    b. Anegada Passage – approximately 15 minutes for St. Thomas, a little less for St. John, 20–25 minutes for St. Croix;
    c. Northwest Puerto Rico or Eastern Hispaniola Coasts – possibly 1 hour for St. Thomas, a little more for St. John, and approximately ten minutes more for St. Croix;
    d. Slope Collapse North Coast of Dominica – maybe 40 minutes for St. Croix, about 50 minutes for St. Thomas and St. John;
    e. Kick-'em-Jenny Submarine Volcano– 80 minutes for St. Croix, 95–100 minutes for St. Thomas and/or St. John;
    f. Lisbon, Portugal or Canary Islands – approximately 7 hours.
4. It is very likely that a tsunami would eventually affect all coasts of the Territory no matter where the source area was located

Capability Assessment

1. Tsunami
    a. Capabilities
        i. Protection
            1. Identified evacuation routes and installed evacuation route signs.
            2. Territory conducts annual tsunami preparedness week activities and participates in the annual CARIBE WAVE exercise.
        ii. Response
            1. Installed and tested tsunami warning sirens throughout the territory.
            2. Implementation of VI Alert and IPAWS.
        iii. Recovery (*TBP*)
    b. Limitations
        i. Capability to support any significant number of cruise ship passengers that disembark on St. Thomas.
        ii. Capability to support a significant number of response personnel and equipment from outside the territory on St. Thomas.
        iii. The Territory does not possess any Heavy Search and Rescue teams or equipment.
        iv. Personnel and equipment capabilities for harbor clearing operations.
        v. Equipment and personnel from VI Fire Service, EMS, and Rescue to support a mass casualty event.
        vi. Process for deputizing federal law enforcement (ESF-13) personnel to perform law enforcement duties in the territory in support of emergency response operations.

Planning Assumptions

1. The two most likely causes of tsunami hazard in the USVI are seismic events in the Caribbean region and from a submarine landslide in the Puerto Rico Trench.
2. Time to warn the public, evacuate vulnerable facilities, and secure coastal areas will vary from minutes to hours, depending on the location of the source.
3. The first wave may not be the largest nor the most destructive.
4. After the arrival of the first tsunami wave, waves may continue for several hours.
5. Risk areas may be re-opened from several hours to several days after the last observed wave, or at least two (2) hours after the Estimate Time of Arrival (ETA) has passed without a wave coming ashore.

6. A tsunami will strike during tourist high season when there is a high density of tourists and residents present in the most affected areas.
7. Access to and from the damaged areas is likely to be restricted and coastal areas may remain partly inundated for several days.

Concept of Operations

A. General

1. All actions and responses within this Annex will be in accordance with the National Incident Management System (NIMS).
2. The ICS is the standard for on-scene emergency management throughout U. S. Virgin Islands.

B. Evacuations

1. Attachment B contains tsunami inundation maps for St. Croix, St. John, and St. Thomas.
    a. The maps show potential evacuation routes and assembly areas.
2. The evacuation of large numbers of people from vulnerable areas will stress the limited capabilities of the territory's road network.
3. Each EOC Supervisor or senior person in the EOC will work with their ESF-13 representative to develop a plan to provide security for evacuated areas once the Pacific Tsunami Warning Center (PWTC) downgrades the tsunami to an advisory and an initial damage assessment is conducted to determine it is safe to enter the area.

C. Safe Return Protocols

1. Once a tsunami warning for an island is downgraded to an advisory initial damage assessments will be conducted to determine if it is safe to return to the inundation zones. Initial damage assessments will be provided to the respective EOC who will recommend to the VITEMA Director or first available Deputy Director that the all clear can be issued for the island.
2. All clear and safe to return announcements will be made through all available resources that are still operational.

Direction and Coordination

A. General

a. The procedures outlined in this section reflect the standard processes the Territory will follow in response to an incident.
b. There may be instances where an incident is of such magnitude that the Governor or

Director of VITEMA will have to modify the direction, control, and coordination processes outlined here. If that is necessary, the changes processes will be disseminated by the most practical means possible at the time.

B. Direction

a. Direction and control of a Territorial emergency resides with the Director of VITEMA.

b. The Director of VITEMA will coordinate all Territorial agencies mobilized pursuant to this plan.

C. EOC Operations

a. VITEMA operates EOCs in the following locations

i. St. Croix

1. The current facility is in an inundation zone. Required actions are covered in the Main Facility Emergency Evacuation Plan.
2. The designated COOP site is the Virgin Islands National Guard Joint Force Headquarters.

ii. St. John

iii. St. Thomas

b. Coordination between EOCs

i. Due to St. John's limited resources the island will need to coordinate with the St. Thomas EOC for support

ii. Each EOC needs to share information with and have situational awareness of operations in the other two.

c. Activation of one or more EOCs will take place under one or more of the following conditions

i. Whenever the TEOP is activated

ii. Receipt of a tsunami warning

iii. The territory is struck by a 6.0 or above earthquake

iv. As directed by the Governor or VITEMA Director or their successors in the event they are incapacitated or off island.

d. EOC Staffing

i. Upon receipt of a tsunami warning VITEMA will implement a partial activation of the EOCs and will be staffed by the EOC Supervisor and immediately available VITEMA staff.

ii. In the event of a local tsunami warning VITEMA will recall all ESF positions and fully activate the EOCs after impact when it is determined to be safe for personnel to travel.

iii. In the event of a regional or distant tsunami warning VITEMA will implement

a partial activation of the EOCs. The EOCs will be staffed by the EOC Supervisor, Operations Section Chief, Planning Section Chief, Logistic Section Chief, and available VITEMA staff. After impact VITEMA will fully activate each EOC and recall of all ESF positions when it is safe to do so.

D. Coordination

a. VITEMA maintains the following Tsunami Focal Warning Point (TFWP) groups containing the positions shown.

i. USVI Intl TFWP

1. Director
2. Assistant Director
3. Deputy Director of Operation
4. Deputy Director of Planning and Preparedness
5. Public Information Officer

ii. USVI Domestic TFWP

1. Director
2. Assistant Director
3. Deputy Director of Operation
4. Deputy Director of Planning and Preparedness
5. Public Information Officer
6. St. Croix EOC Supervisor
7. St. John EOC Supervisor
8. St. Thomas EOC Supervisor

Communications

A. General

1. Each EOC Supervisor maintains a contact list for their ESCs.
2. Each 911 ECC maintains a territorial Call Down Notification list that addresses a number of critical events to include tsunami warnings.
3. The notification systems listed in this section will be used to provide warnings and incident updates
4. The All-Hazards Siren System will be used to announce the initial tsunami warnings with additional announcements being made via IPAWS and VI-Alert.

B. Notification Systems

1. VI ALERT
    a. VI-Alert is the Virgin Islands all-hazards alert and notification system.
    b. Individuals must register in VI-ALERT in order to receive emergency notifications.

2. All-Hazards Siren Warning System.
    a. General
        i. The siren system is made up of sirens located on St. Croix, St. John, St. Thomas, and Water Island (procurement initiated)
        ii. The system is set up to notify people who are outside of buildings
        iii. The system alerts the public using tones, pre-recorded voice messages, and actual voice messages
        iv. The system was developed primarily for no-notice or short notice events such as a tsunami.
    b. Siren Activation
        i. The All-Hazards Siren Warning System is activated by VITEMA's 911 Emergency Communications Centers (ECC).
        ii. Each 911 ECC has the capability to activate the entire territorial siren system, by island, or selected sirens as needed.
        iii. The first 911 ECC to receive a tsunami warning through the National Warning System, Pacific Tsunami Warning Center (PTWC), or Puerto Rico Seismic network will immediately activate the siren system for the areas identified in the warning message. Once the sirens are activated the 911 ECC will implement their Weather Warning call down procedures.

3. Integrated Public Alert and Warning System (IPAWS)
    a. VITEMA will activate IPAWS to provide alerts to the public via the Emergency Alert System (EAS), Wireless Emergency Alerts (WEA), the National Oceanic and Atmospheric Administration (NOAA) Weather Radio, and other public alerting systems available at the time.
    b. IPAWS is an important notification tool that will allow VITEMA to provide emergency alerts to any resident or visitor to the territory that has a cell phone.

Plan Development and Maintenance

1. The VITEMA Deputy Director for Planning and Preparedness is responsible for ensuring that the Tsunami Incident Annex is maintained and updated.
2. The process used to develop and maintain the Tsunami Incident Annex will be based on nationally recognized emergency planning principles and best practices.
3. The Tsunami Incident Annex is designed to be a flexible, dynamic document subject to revision, as appropriate.
4. Revisions may result from a variety of causes such as:
    a. New procedures, policies or technologies
    b. Lessons learned from an actual event or exercise
    c. Feedback during training or case study review
    d. To accommodate new organizations, organizational structures, or systems
5. Major revisions are considered revisions which significantly alter or establish new policy and will be approved by the VITEMA Director.
6. The VITEMA Deputy Director for Planning and Preparedness will coordinate a review of the Tsunami Incident Annex annually and incorporate suggestions and changes as needed.
7. New versions of the Tsunami Incident Annex will be disseminated to all stakeholders and the current version will always be posted on VITEMA's public website.
8. The VITEMA Deputy Director of Planning and Preparedness in coordination with the VITEMA Director will regularly conduct training and exercises to ensure that VITEMA staff, key stakeholders, and partners are familiar with the Tsunami Incident Annex.
9. Exercise records will be kept by VITEMA.
10. Improvement Plan(s) and After Action Report(s) will be developed and kept on file following each exercise.
    a. To be used for future improvements and updates to the Tsunami Incident Annex.
    b. To help improve processes and procedures.

Authorities and References

V. I. Code, Title 23, the VITEMA Act (5233) of 1986

VI Emergency Management Act of 2009

National Response Framework (NRF), 3rd Ed, June 2016

National Protection Framework, 2nd Ed, June 2016

National Prevention Framework, 2nd Ed, June 2016

National Mitigation Framework, 2nd Ed, June 2016

Homeland Security Presidential Directive-5 (HSPD-5), Management of Domestic Incidents, February 28, 2003

HSPD – 8

National Incident Management System (NIMS)

Homeland Security Act of 2001

Robert T. Stafford Disaster Relief and Emergency Assistance Act

Comprehensive Planning Guide (CPG) 101 Version 2

Post Katrina Emergency Management Reform Act of 2006, Public Law 109-295.

Pet Evacuation and Transportation Standards Act of 2006, Public Law 109-308.

The Code of Federal Regulations, Title 44, Chapter 1, Federal Emergency Management Agency, October 1, 2007.

National Security Presidential Directive 51/ Homeland Security Presidential Directive 20, *National Continuity Policy*, May 4, 2007.

2014 Virgin Islands Territorial Hazard Mitigation Plan

St. Croix Main Facility Evacuation Plan, March 2017

FEMA Region II USVI Tsunami Operations Plan, May 2012

Acronyms and Terms

Acronyms	
AAR	After Action Report
CFR	Code of Federal Regulations
CIKR	Critical Infrastructure and Key Resources
COOP	Continuity of Operations
DHS	United States Department of Homeland Security
EAS	Emergency Alert System
EMHS Council	Emergency Management Homeland Security Council
EMS	Emergency Medical Services
EO	Executive Order
EOC	Emergency Operations Center
EOP	Emergency Operations Plan or Procedures
ESF	Emergency Support Function
ETA	Estimated Time of Arrival
FEMA	Federal Emergency Management Agency
GAR	Governor's Authorized Representative
GIS	Geographic Information Systems
HAZMAT	Hazardous Materials
ICS	Incident Command System
IPAWS	Integrated Public Alert and Warning System
JIC	Joint Information Center
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NGO	Non-Governmental Organization
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NRF	National Response Framework
NWS	National Weather Service
PDA	Preliminary Damage Assessment
RMT	Required Monthly Test
SME	Subject Matter Expert
SOP(s)	Standard Operating Procedure(s)
STJ	St. John
STT	St. Thomas
STX	St. Croix
TBP	To Be Published
THIRA	Threat and Hazard Identification and Risk Assessment

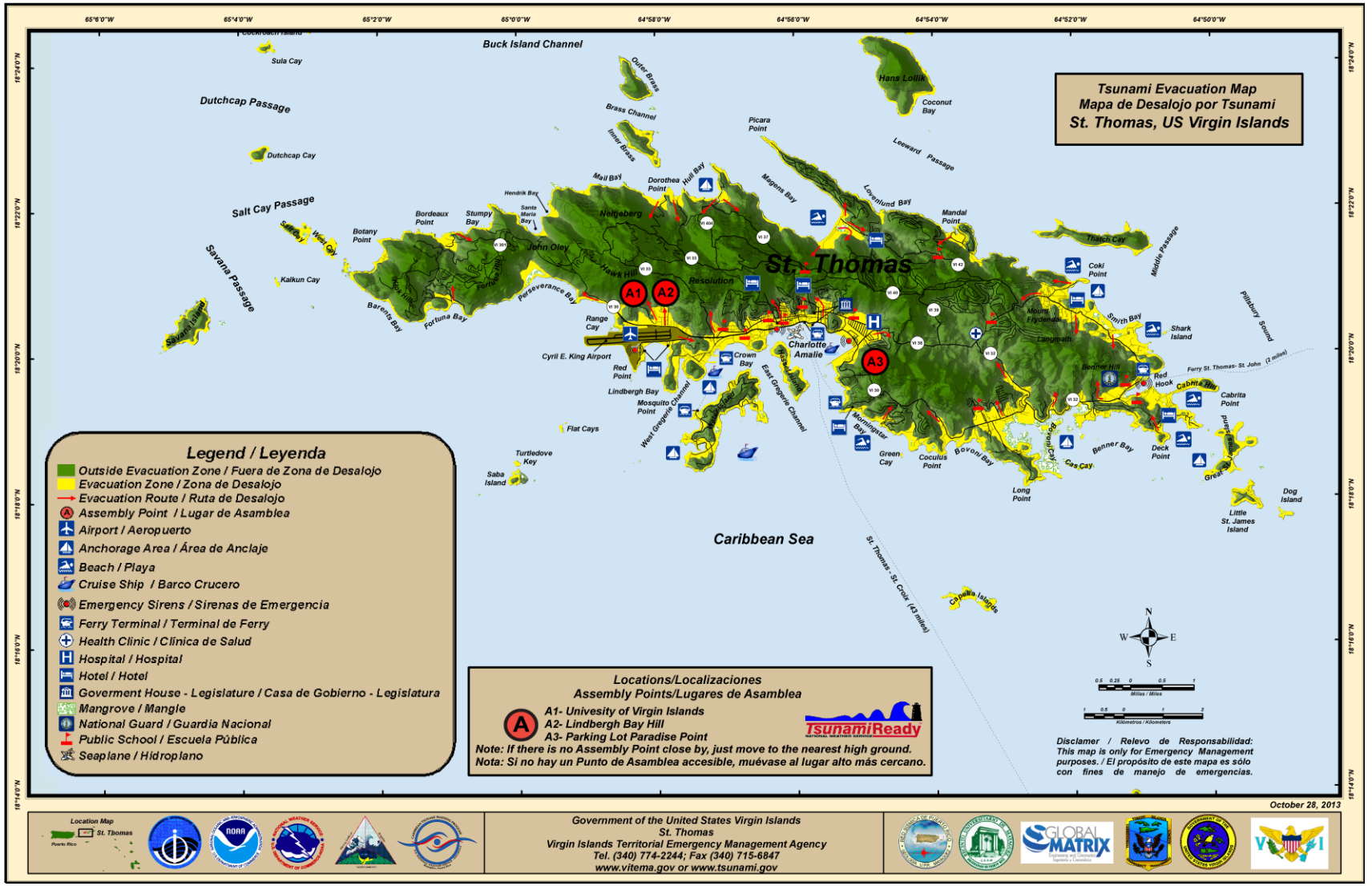
Acronyms	
VITEMA	Virgin Islands Territorial Emergency Management Agency

Attachment A – Memorandums of Understanding, Memorandums of Agreements, and other agreements

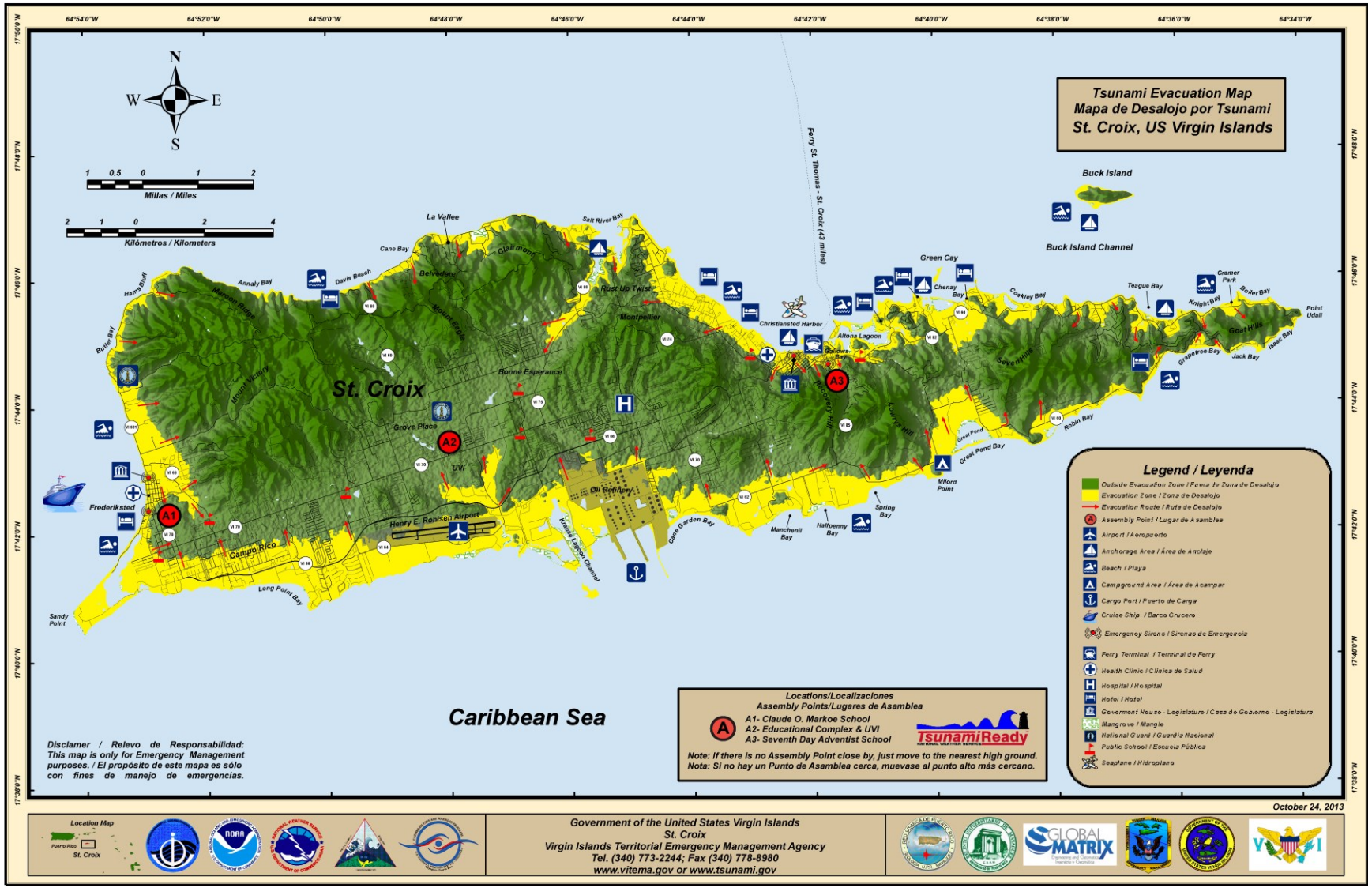
(TBP)

Attachment B – Tsunami Inundation Maps

Tsunami Hazard Map, St. Thomas



Tsunami Hazard Map, St. Croix



Tsunami Hazard Map, St. John